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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
CHEU, CHANGHWA J

ART UNIT	PAPER NUMBER
1641	

DATE MAILED: 09/24/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/924,428	Applicant(s) WU ET AL.	
	Examiner Jacob Cheu	Art Unit 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23 and 25-115* is/are pending in the application.

4a) Of the above claim(s) *35-55,58-66,70-91 and 96-114* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23,25-34,56,57,67-69,92-95 and 115* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *12* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Applicant's amendment filed on July 14, 2003 has been received and entered into record and considered.

The following information provided in the amendment affects the instant application:

1. Claim 24 is cancelled.
2. Claim 115 is added to the instant application.
3. Claims 1, 10, 22, 26, 56 are amended.
4. Currently, claims 1-23, 25-34, 56-57, 67-69, 92-95 and 115 are under examination.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5, 15-17, 21-23, 26, 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 5, line 3, "cube-like" shape, is vague and indefinite. It is unclear how one defines the "cube-like" shape in the art.

With respect to claim 15, line 3 "a substance immobilized on the substrate" is vague and indefinite. It is unclear what this substance is. Applicant does not clearly define this substance. Accordingly, the dependent claims 16-17, 21-23 do not further limit or define this substance.

With respect to claim 26, line 3, "a complex of a cell, a cellular organell, a virus and/or a molecule" is vague and confusing. It is not clear what is the difference between "complex" and "aggregate" used by applicants in the same claim language.

With respect to claim 26, line 2, "a molecule" is vague and indefinite. It is unclear what this molecule refers to. Applicant needs to set a clear metes and bounds for the claim language.

With respect to claim 29, line 3, "a charged material" is vague and indefinite. It is unclear what constitutes a "charged material."

With respect to claim 32, it is rejected because of its duplication with respect to claim 28.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Chan et al (US 5120662), Tiffany et al. (US 5508200), or Liotta et al. (US 5942407), respectively.

The aforementioned prior art, *each individually*, anticipates the instant claims because all references teach every feature recited in the instant invention, including a device comprising a substrate, a photorecognizable coding pattern on the substrate (e.g. bar code), a binding partner capable of binding to a moiety to be manipulated and no need of anodized metal surface layer.

For Chan et al. reference, see Figure 11, where the binding layer (component 84) as substrate for binding partner, and photorecognition bar code (component 94) is on the substrate.

For Tiffany et al. reference, see Figure 2, where component 17 is a substrate which can be bound to binding partners, and component 10 is a photorecognizing bar code (Col. 5, line 25-37).

For Liotta et al. reference, see Figure 1A-1B, where layer 10 is a substrate containing binding partner ligand, and bar code photorecognition pattern (Figure 5, Col. 15, line 17-25; Col. 17, line 25-30).

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-6, 11, 15-23, 25-29, 31, 33-34, 56-57, 67-68, 92, 95, 115 are rejected under 35 U.S.C. 102(e) as being anticipated by Cattell (US 6180351).

Cattell teaches an addressable array of biopolymers, such as DNA probes, on a substrate. (See abstract) The DNA probes are the binding partners which can be manipulated by hybridization binding reaction. The substrates are selected from the group consisting of glass, silicon dioxide (i.e. silica), metals and plastics. (Col. 13, line 65 to Col. 14, line 1-5) Cattell teaches that the substrate surface layer can be modified by adding organic or inorganic layers, and the modified layer thickness can be ranged from 0.1 mm to 1

micron. (Col.14, line 12-16) The bar code (component 356) is lithographically fabricated on the glass substrate (component 10). (See Figurer 1) The bar code inherently has different optical refractive property than that of the substrate. (See Figure 1) The bar code substance is deposited on the substrate for photorecognition. (See Figure 1) Cattell also teaches using fluorescent markers for the detection of the binding pattern. (Col. 1, line 22-25) Cattell teaches that the substrate shape may be of any shape. (Col. 7, line 45-46) The device taught by Cattell does not comprise an anodized metal surface layer. Neither the device comprises a porous surface, nor a microprocessor. With respect to claim 4, the instant claim recites that the surface is either hydrophilic or hydrophobic. As mentioned before, Cattell teaches that the surface layer can be modified by either organic or inorganic approaches, the surface therefore is inherently possesses the characteristics of hydrophilic or hydrophobic after modifications by adding peptides, proteins, polynucleic acids, polyesters, polyureas, polyimides, and the like. (Col. 14, line 17-25)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cattell.

Cattell reference has been discussed with respect to the non-specific shapes requirement on the substrate. (Col. 7, line 45-46) However, Cattell reference is silent in specifying the dimensions on the substrates. Nevertheless, it has been held that a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955) Furthermore, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

10. Claims 12-14, 30 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cattell in view of Zhou et al. (WO 0054882)

Cattell reference has been discussed before but fails to specifically teach using aluminum, magnetic, nickel or CoTaZr alloy. Zhou et al. teah using external active forces, such as magnetic manipulation over biochips, for detection of biomolecules with the advantages of microfabrication and microelectronic technologies. (page 5, last paragraph and second paragraph; page 6, first paragraph;) Zhou et al. teach using aluminum as the conductive layers beneath an insulating non-metal layers, and method of obtaining a nickel alloy for the biochip. (page 35, first paragraph; page 29, first paragraph) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the method of Cattell with the metal layers or alloy as taught by Zhou et al, since using the active biochips, e.g. external magnetic forces, providing advantages over the passive biochips in microfabrication and microelectronic technologies.

Allowable Subject Matter

11. Claim 94 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is an examiner's statement of reasons for allowance: no prior art teaches or suggests a device having a hole as the photorecognizable coding pattern and said hole does not penetrate through the entire depth of the substrate.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Applicant's Arguments

13. Applicant's arguments with respect to claims 1-23, 25-34, 56-57, 67-69, 92-95 have been considered but are moot in view of the new ground(s) of rejection.

With respect to applicant's argument on the reference of Zhou et al. (US 6355491), examiner agrees with the reasoning of applicant because Zhou et al. (US 6355491) is a 102 (e) reference under the same assignee. Therefore, 35 U.S.C. § 103 (c) precludes using this reference to bar patentability. Nevertheless, Zhou et al. (WO 0054882) is NOT a 102 (e) reference, i.e. publication date is 9/21/2000, earlier than the instant filing date 8/7/2001). In addition, Zhou et al. (WO 0054882) reference has different assignee than that of Zhou et al. (US 6355491) Accordingly, it is deemed proper to use the Zhou et al. (WO 0054882) reference for the 35 U.S.C. §103 (a) rejection.

Conclusion

14. No claim is allowed.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Cheu whose telephone number is 703-306-4086. The examiner can normally be reached on 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 703-305-3399. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3399.

Jacob Cheu
Examiner
Art Unit 1641

September 20, 2003

LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600
09/20/03